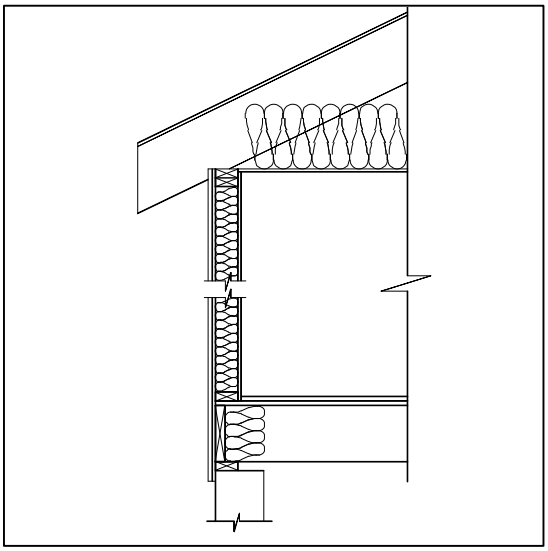
WALK-THRU ENERGY WORKSHEETS



FOR ADDITIONS ELIGIBLE FOR THE WALK-THRU PROCESS (ONE STORY & 1000 SQUARE FEET OR LESS)

WHAT ARE THE *WALK-THRU* ENERGY WORKSHEETS

Fairfax County is required to enforce the CABO Model Energy Code. Provisions of the code require that all building elements which enclose conditioned spaces must be designed to maximize thermal resistance and minimize air leakage. The required worksheets contained herein provide a method to determine compliance with those provisions.

WHAT ARE MINIMUM REQUIREMENTS

This handout is a tool to help determine the minimum R-value of wall insulation, windows and doors of proposed additions. The process to make these determinations, as outlined in this handout, is based on constant R-values in the remaining elements of the building envelope (see Figure 1) as well as other restrictions; they are as follows:

- **!** Roof/ceiling assembly: R-30.
- **!** Floor over a crawl space: R-19.
- **!** Floor of overhangs, including bay windows: R-30.
- **!** Skylights: maximum skylight area of 1% of the gross roof/ceiling area of the addition only.
- **!** Crawl space walls in heated crawl spaces: R-13.

THE PERMIT APPLICATION CENTER

OFFICE OF BUILDING CODE SERVICES

Hours of Operation for Walk-in Customers:
Monday through Friday (except holidays)
8:00 a.m. to 4:00 p.m.

Other publications and forms are available on the DPWES website:
www.co.fairfax.va.us/dpwes

Herrity Building
12055 Government Center Parkway
Fairfax, Virginia 22035
Telephone: 703-222-0801
TTY: 703-324-1877
Telephone Hours: 8:00 a.m. to 4:30 p.m.

MINIMUM REQUIREMENTS, CONTINUED

- Insulation for slab-on-grade is R-4 for unheated slabs and R-6 for heated slabs. See Figure 2.
- Insulation for heating and cooling ducts in an unconditioned crawl space: R-5.
- The maximum percent of window and door openings within the addition's walls is 32%. The actual percentage is determined in this handout.

READ THIS: If you wish to deviate from the above minimum requirements or the required R-values determined on the preceding pages or your addition does not qualify for the walk-thru process, you must complete the energy trade-off worksheet for new single family dwellings rather than use the procedures contained in this handout. Those worksheets can be found in the Fairfax County handout entitled *Energy Trade-Off Worksheet***.**

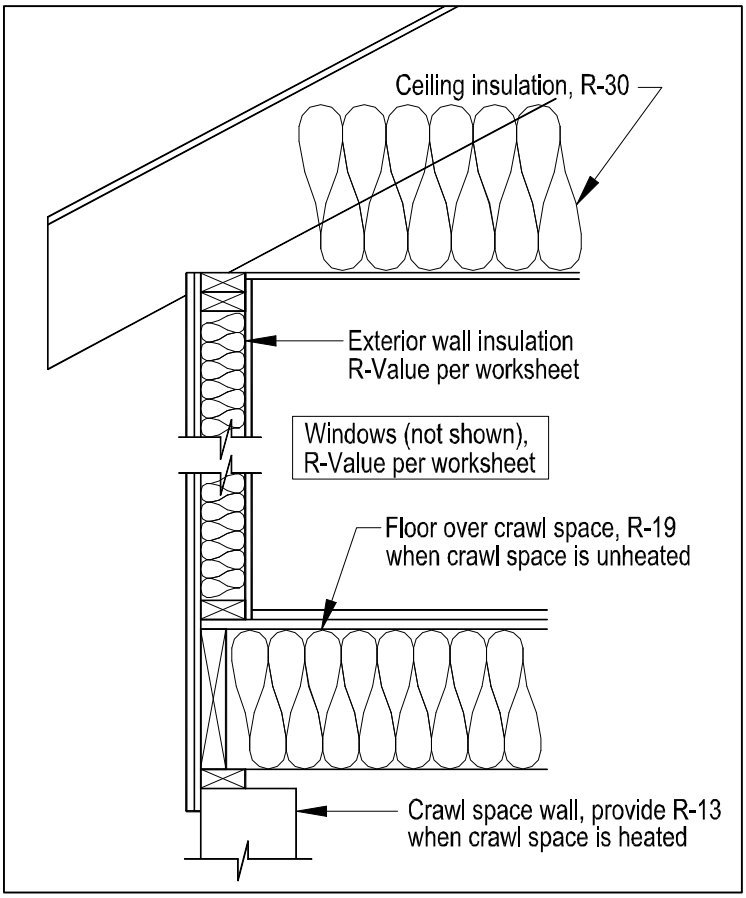


FIGURE 1: TYPICAL SECTION FOR INSULATION VALUES

WHAT ARE THE REQUIREMENTS FOR LUMBER SIZE

The floor, roof/ceiling, and wall construction must have adequate cavity space to contain the insulation required herein. The minimum lumber size required per R-value insulation is noted below.

R-Value	Minimum Lumber Size
R-11, R-13	2x4
R-19	2x6
R-30	2x10

HOW TO COMPLETE THE WALK-THRU ENERGY WORKSHEETS

Attached are the Walk-Thru Energy Worksheets; directions are contained therein. For a complete review one copy of the worksheet must be attached to each set of the construction drawings. An additional blank worksheet is attached for the second set of drawings; you may also use photocopies. DO NOT COMPLETE THE WORKSHEETS IN PENCIL.

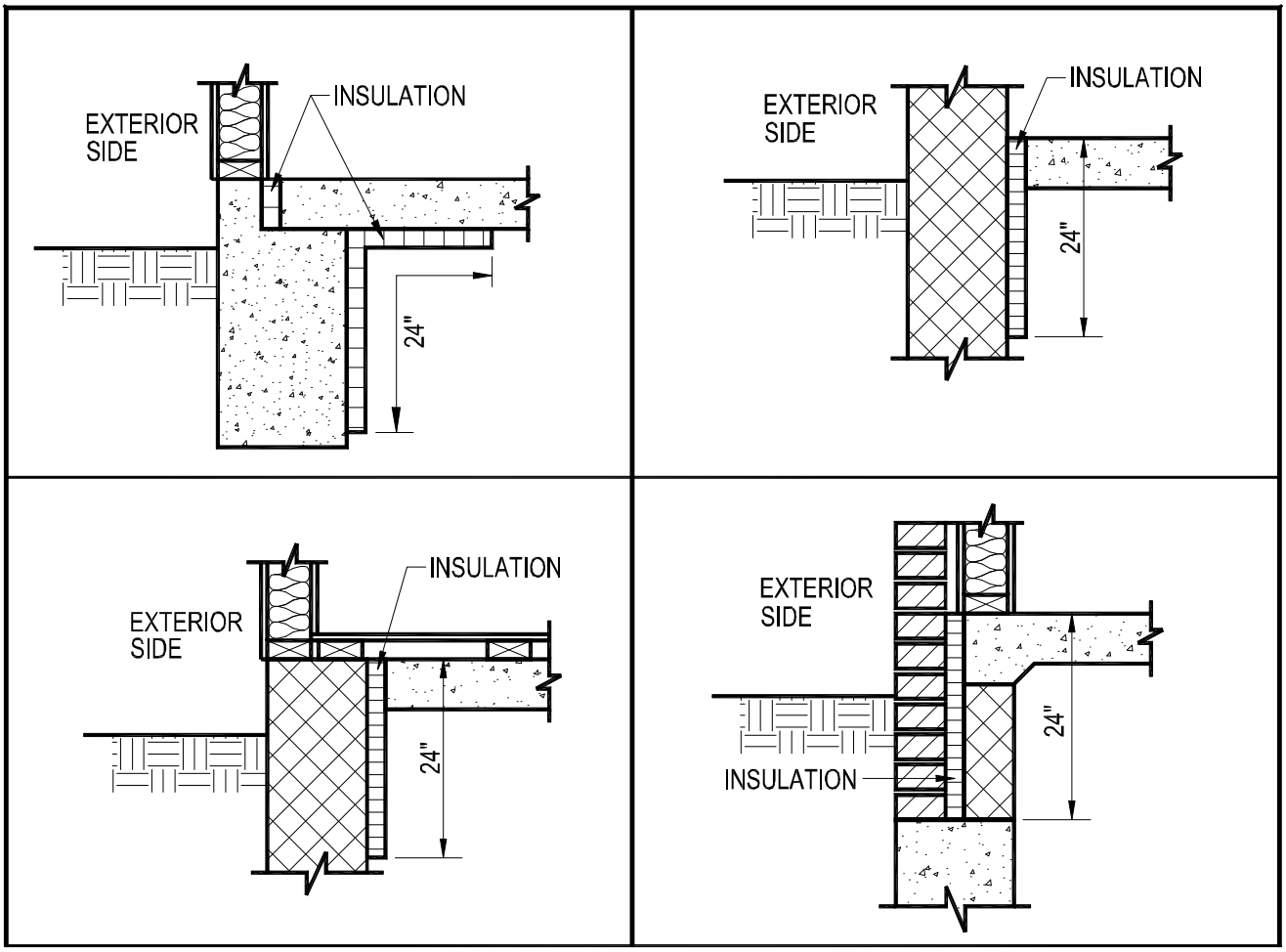


FIGURE 2: SLAB INSULATION

Notes:

1. The minimum R-value for an unheated slab is R-4. The minimum R-value for a heated slab is R-6 (heated slabs are those in which heating elements or the hot air distribution system is in contact with or placed within the slab-on-grade or the subgrade below).

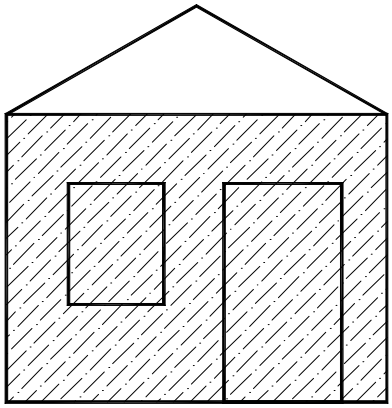
2. Insulation must start from the top of the concrete slab and be continuous for 24".

Project Address:_____ Permit Number:_____

Name of Designer:_____ Occupation:_____

1) Use the table below to calculate the area of each exterior wall of the proposed addition. Add all the wall areas in the right hand column and place the sum in the "Total Wall Area =" box.

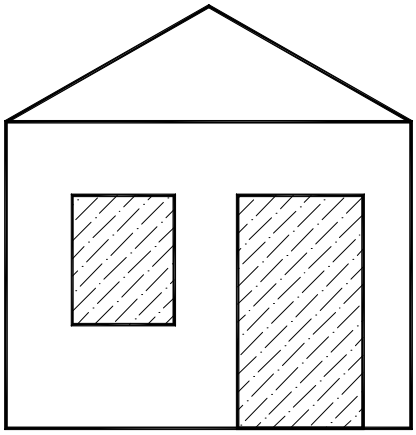
SQUARE FOOTAGE OF WALLS		
Wall	Height x Length	Area
1		
2		
3		
4		
5		
	Total Wall Area =	



WALL AREA

2) Use the table below to calculate the area of each window and door type of the proposed addition. Add all the window and door areas in the right hand column and place the sum in the "Total Window/Door Area =" box.

SQUARE FOOTAGE OF WINDOWS OR DOORS		
Window/Door	Height x Width x No. of each	Area
1		
2		
3		
4		
5		
6		
7		
8		
	Total Window/Door Area =	



WINDOW/WALL AREA

3) Transfer Total Wall and Total Window/Door Areas from the above tables to the appropriate boxes below and perform the calculation shown.

Total Window/Door Area		Total Wall Area				
	÷		x 100 =		%	☜Percent Openings

4) Check the most appropriate row for the Percent Opening calculated in Step 3. Use the next highest value in the Maximum Allowable Percent Opening column.

WALL, GLASS R-VALUE DETERMINATION				
Check ✓ Row	Maximum Allowable Percent Opening	Wall Insulation R-Value	Window/Door R-Value*	Glass Type
	6%	R-11	0.89	Single Glazed Openings
	7%	R-13		
	9%	R-19		
	8%	R-11	1.15	Double Glazed Openings
	10%	R-13		
	12%	R-19		
	12%	R-11	1.5	Double Glazed Openings
	13%	R-13		
	16%	R-19		
	16%	R-11	2.0	Double Glazed Openings
	18%	R-13		
	22%	R-19		
	20%	R-11	2.4	Low E, Double Glazed Openings
	22%	R-13		
	26%	R-19		
	24%	R-11	2.8	Low E, Double Glazed Openings
	27%	R-13		
	32%	R-19		

*U-value = 1 / R-Value

5) Transfer the required wall insulation R-value and the Window/Door R-value from the table above to the appropriate two boxes in the table below. The other figures in the table are fixed. All values in the table below, when applicable, must match those shown on the construction drawings.

REQUIRED R-VALUES	
Exterior walls	
Windows and doors	
Roof/ceiling	R-30
Floor over crawl space (when applicable)	R-19
Floors at bay windows (when applicable)	R-30
Crawl space walls (when applicable)	R-13